### SUBJECT INDEX

A	and, 77, 79-82, 85-87,	neuropeptides, 111-12
Abetalipoproteinemia (ABL),	92–93	nutrient flux and, 115-18
663-64, 667-86	Adaptation	receptors, 107
apolipoprotein	calcium and, 1, 7-10	site of action in brain,
B-containing lipoproteins	osteoporosis and, 9-10	110–11
and, 667	low-protein diets and, 6-7	lipolysis in, 365–82
clinical characteristics,	Adenylate cyclase, 516-17	white, 536
667–72	Adipocyte	Albumin
lipid metabolism and, 672–74	Differentiation See Adipogenesis	copper transport and, 293–94
microsomal triglyceride	leptin-induced apoptosis	Alcohol
transfer protein and,	in, 118-19	hepatotoxicity, 395-417
663-64, 667-86	Adipogenesis	cytochrome P4502E1
treatment, 675-78	events, 547-49	(CYP2E1) and, 395,
vitamins E, A deficiency	transcriptional control,	400-1
and, 675-75	535-50	oxidative stress and,
Absorption	ADD1/SREBP, 544-46	395, 401, 414
copper, 291-94	CCAAT-enhancer-	metabolism and interaction
ethanol's effects on, 406	binding protein, 542	with nutrients, 395-417
intestinal, 195, 202-13	peroxisome proliferator-	alcohol dehyrogenase
fasting and malnutrition	activated receptor and,	(ADH) pathway,
and, 205–13	537-42	397-400
iron, 273–87	Adipose tissue	microsomal ethanol
adult, 273-75	brown, 339-56, 372-73,	oxidizing system, 397,
definitions, 274–75	536	400-1
distinction between iron	mitochondrial	protein metabolism and,
retention and, 275	uncoupling protein and,	415–16
Acetaldehyde, 397	339–56	three main pathways of,
Acyl-CoA-synthetase (ACS)	thermogenesis, 339–56	397
triacylglycerol synthesis	hormone-sensitive lipase	moderate intake, 561
and, 77, 79–81, 84–88,	and, 365–82	nutrient activation and,
92–93	leptin and, 105-19	406–9
acyl-CoA channeling and,	apoptosis and, 118-19	See also Alcoholics;
92–93	body fat mass regulation,	Ethanol; Wine
exercise and, 90	105–19	Alcoholics, 395-417
very-long-chain (VLACS),	expression and secretion,	increased vulnerability of,
80-81	107–10	400–1
Acyltransferase, 77, 79–81	metabolism regulation,	methionine deficiency in,
glycerol-3-phosphate	105–19	407–8
(GPAT), 81–82	neuroendocrine effects,	nutritional status of,
triacylglycerol synthesis	114–15	401–6

nutritional therapy for, apobec-1 and, 169, 172-77 lipoprotein assembly, 169, 416-17 178 - 80phosphatidylcholine activity and, 409 microsomal triglyceride pyridoxine deficiency in, transfer protein (MTP) 406-7 and, 169-70, 178-80, 679-86 S-adenosylmethionine depletion and, 407-8 mRNA editing, 169-77 tolerance to ethanol of presecretory degradation, 169-70, 180-84 metabolic, 400 mechanisms of, 182-84 nervous system, 400 Amino acid metabolism Apoptosis diurnal and exercise age-related macular modulation of. degeneration, 494-95 antioxidants and, 495 461-62 exercise and, 457-64, atherosclerosis and. 495-47 471-77 antioxidants and, 496-97 intermediary, 460 protein metabolism and, cholesterol and, 497 zinc and, 497 457-77 transport, 460 carcinogenesis and, 488-93 butyric acid and, 490-91 Amino acids branched-chain, 459 isoflavones and, 485, 491 Anemia monoterpenes and, iron deficiency, 129-30, 491-92 132, 136, 138, 273-74 cognitive development phase-2 enzyme and, 274 inducers and, 489-90 Anti-obesity drugs sphinolipids and, brown fat thermogenesis 492-93 and, 340, 345, 356 definition and functions. Antioxidants 486-88 diet and, 485-99 apoptosis and, 485, immunity and, 497-98 493-97 age-related macular zinc and, 498 degeneration, 494-95 leptin and inhibition of, 50 atherosclerosis, 496-97 leptin-induced adipocyte, inhibition of 118 - 19neurodegenerative neurodegenerative diseases and, 493-44 diseases, 493-94 Apobec-1, 169, 172-77 antioxidants and, 493-44 characterization of, 174-77 Atherosclerosis, 485, 495–97 genetic and functional, apoptosis and antioxidants and, 496-97 176-77 cholesterol and, 497 Apolipoprotein B, 169-84 abetalipoproteinemia and,

663, 672-86

Body fat leptin expression and secretion and, 46-49, 51 mass regulation leptin and, 105-19 Body weight regulation of brown fat thermogenesis and, 339-56 mitochondrial uncoupling protein (UCP1) and, 339-56 See also Mitochondrial uncoupling protein; Thermogenesis Bone, 507, 509, 520-21 extracellular Ca2+-sensing receptor in distribution and function of, 520-21 Bone-mineral status maternal, 250-52, 257-59 lactation and, 257-59 pregnancy and, 250-52 Bone turnover, 249, 259-61 Breast cancer dietary fat and, 221-43 incidence and mortality statistics, 222-23 risk estrogen and, 223 tumor carcinogenesis, 223 studies analytic studies, 225-26 animal experiments, 223-24 assessment tools. 240-41 case control studies. 233-37 cohort studies, 233-37 confounding, 238-39 correlational studies. 225 zinc and, 497 dietary history, 241 susceptibility, 170

В

epidemiologic studies, physiological adaptation **B-Carotene** 224-25 and, 249 adverse reactions of measurement error, 240 pregnancy and, 249-56 ethanol with, 413-15 randomized controlled bone-mineral status. Case-control studies trials, 237 250-52 breast cancer and dietary study design, 238 calciotropic hormones, fat, 221, 226-33, 242 variation in exposure, 249, 253-55 CCAAT enhancer-binding 240 calcium requirements, protein (C/EBP), 534, Breastfeeding 249-50 542-44 intestinal epithelial cells C-cells, 517 recommendations, 263-64 requirements, 249-50, 256 Cell proliferation and, 314-16 iron availability and, 315 Calcium homeostasis leptin and, 50 lactoferrin and, 314-16 extracellular Ca2+-sensing Ceramide, 443 See also Human milk receptor and, 507-27 Ceruloplasmin, 132, 135, Brown adipose tissue possible central 139, 294 mechanisms of, 522 Cholesterol leptin resistance and, 342-43 Calorie restriction atherosclerosis and, 497 mitochondrial uncoupling mucosal mass and, 199 dietary guidelines, 1, protein (UCP1) and, cAMP 10 - 13339-56 triacylglycerol (TAG) metabolism, 674 function, 349-51 synthesis and, 85, 88-89 Cholesteryl ester hydrolase, homologues, 339-56 Cancer, 22, 382 365 breast, 221-43 Cirrhosis, 395-417 overexpression, 345-48 structure, 348-49 colorectal nutritional status and. exercise and reduction 395-97, 40-46 nonshivering thermogenesis (NST), in. 22 See also Alcohol; 340-56 hormone-sensitive lipase Hepatotoxicity Butyrate, 311-12, 327 and, 382 Cohort studies breast cancer and dietary intestinal gene expression isoflavones and, 311-12 decreased risk and, 491 fat, 221, 233-37, 242 Colorectal cancer Butyric acid See also Breast cancer exercise and reduction in. Carcinogenesis, 488-93 carcinogenesis and, 490-91 apoptosis and, 488-93 Confounding, 221, 238-39 butyric acid and, 490-91 Calciotropic hormones, 249, dietary fat and, 492 Copper isoflavones and, 485. adsorption, 291-94 253-55 Calcium chaperones dietary guidelines, 1, monoterpenes and, copper transport and, 7 - 10491-92 291, 296-97 lactation and, 256-61 nutritional status of phase-2 enzyme bone-mineral status, inducers and, 489-90 alcoholics and, 405 257-59 sphingolipids, 492-93 transport, 291-302 breast-milk calcium albumin and, 293-94 cytochrome P450 and, 489-90 ceruloplasmin and, 294 secretion, 256-57 calcium requirements, Cardiovascular disease copper chaperones and, wine's protective effect 291, 296-97 osteoporosis and, 1, 9-10 against, 573-81 cytochrome c oxidase

Cytokines, 311, 316-19

and, 291, 296-97 synthesis in intestinal glutathione and, 295-97 epithelium, 317-19 histidine and, 293-94 D membrane transport, 295-97 Deaminase, 153, 156 Copper metabolism, 291-302 Depression exercise and, 34 abnormal Menkes gene and, 291, Diabetes, 365, 381 Diacylglycerol (DAG), 78, 297-302 Wilson gene and, 291, 91, 443 297-302 Dietary assessment albumin and, 293-94 breast cancer and dietary ceruloplasmin and, 294 fat, 221-43 copper chaperones and, Dietary fat 291, 296-97 breast cancer and, 221-43 See also Breast cancer copper-transporting ATPases and, 291, Dietary guidelines, 1, 4-17 calcium, 1, 7-10 297-302 cytochrome c oxidase and, cholesterol, 1, 10-13 complex carbohydrates, 15 291, 296-97 glutathione and, 295-97 degenerative diseases and, Enzymes histidine and, 293-94 14-17 fats, 1, 10-13 77-94 membrane transport and, 295-97 protein, 1, 4-7 Estrogen serum lipids, 1, 10-13 Coronary heart disease Dietary Guidelines for 223 exercise and reduction in. Ethanol Americans, 1, 13-17 Corticotrophin-releasing development of, 13-17 factor, 54, 112 Diglycerides (DGs), 366 leptin-mediated effects, Dihydroxyacetone-phosphate 565 112 acyltransferase Crohn's disease (DHAPAT), 83 enteral feeding for, 317, 3,4-Dihydroxy-2-butanone 319, 329-30 4-phosphate, 153 Cytochrome c oxidase, 291, synthase, 157-58 Dilinoleoylphosphatidyl-296-97 Cytochrome P450 choline (DLPC), 395 Dopamine  $\beta$ -hydroxylase, carcinogenesis and, 489-90 343-44 Cytochrome P4502E1 (CYP2E1) Е 21 - 37conversion of xenobiotics **Eicosanoids** to toxic metabolites by, biosynthesis body weight, 26 400 - 1modulation by fatty characteristics of acids, 433, 436 exercise behavior, 30-31 ethanol-oxidizing activity of, 400 immuno-modulatory role, diet, 27

436-37, 439

prostaglandin and, 436-37, 439 Electrolytes fasting and loss of, 195, 199-205 Endocytosis, 202-3 Energy balance leptin and, 105-19 **Energy utilization** leptin and, 52-54 Enterocyte microvillus membrane, 203 Environmental contaminants, 595-619 traditional food systems of Northern indigenous peoples and, 595-619 mercury, 605-6 PCBs, 606-7 radionuclides, 607 triacylglycerol synthesis, breast cancer risk and, athersclerotic cardiovascular disease, cancer, 566-68 diabetes, 566 metabolism, 395-417 moderate intake, 561 See also Alcohol Exercise, 21-37, 89-90, 457-77 amino acid metabolism and, 457-64, 471-77 behavioral determinants of, access, 29-30, 35-36

exercise history, 25-26

health risk profiles, ion transport, 199-205, 26 - 27213-14 mechanisms underlying injury, 31 motivation, 21, 24, changes in, 203-7 nutrient transport. self-efficacy, 21, 25, 34 205 - 14social support, 28, 36-37 Fat stress, 27-28 Adipogenesis time, 29, 35-36 See Adipogenesis benefits, 22 dietary guidelines, 1, connective tissue 10-13, 15 metabolism and, 469 See also Adipose tissue; depression and, 34 Brown adipose tissue environmental strategies to Fatty acid mobilization. support, 36-37 365-82 nutritional requirements, hormone-sensitive lipase 475-77 and, 365-82 protein metabolism, Fatty acids 457-77 acyl-CoA-synthase and, 80 response to exercise dietary guidelines, 1, 10-13 training, 470-71 smoking and, 27, 33 free, 433-44 triacylglycerol synthesis metabolic conversion, 433 and, 89-90 modulation of immune Extracellular Ca2+-sensing response by, 431-51 receptor, 507-27 monosaturated, 12-13 in bone and cartilage, peroxisome 520-21 proliferator-activated calcium homeostasis and. receptors and, 431, 507-27 445-51 cloning of, 513-14 activation of, 445-47 homology, 515-16 polyunsaturated (PUFAs), in intestine, 521 433, 436, 444, 450-51 in kidney, 518-20 Ferrireductases, 129, 136-38 Mg<sup>2+</sup>o, water, salt Ferritin, 627, 631-65 metabolism and, Ferroxidases, 129, 132, 135, 523-27 139 in parathyroid gland, 517 Folic acid in placenta, 521-22 nutritional status of alcoholics, 403-4, 406 signal transduction pathways, 516-17 Flavanoids, 568-72 structure, 515 Flavinogenic organisms See Riboflavin F Food contaminants, 595-619 Fasting mercury and other heavy metals, 605-6

Northern indigenous

intestinal transport and,

195-214

peoples traditional food systems, 595-619 PCBs, 606-7 radionuclides, 607 Food intake leptin and, 105-19

#### G

Gene expression nutritional regulation of intestinal See Intestinal gene expression Glutathione copper transport and, 295-97 Glycagon triacylglycerol synthesis and, 85, 88 Glycerol-3-phosphate acyltransferase (GPAT), 81-82 triacylglycerol synthesis and, 81-82 Gonadotropin secretion leptin and, 114 Growth factors intestinal gene expression and, 319 leptin and, 50-54 Growth hormone leptin and, 114 Growth hormone releasing hormone leptin and, 51-52 Guanosine triphosphate (GTP), 153-56 GTP cyclohydrolase II, 156 GTP See Guanosine triphosphate

#### H

Health behavior transtheoretical model, 25 Heavy metals, 605-6 Hepatotoxicity

infants' renal excretion alcohol, 395-417 cytochrome P4502E1 of. 711 nonspecific defense and, 395, 400-1 mechanisms of, 707-11 metabolism of proteins prebiotic effects of, and, 415-16 oxidative stress and. 706-7 395, 401, 414 structural diversity of, 700 - 3toxic interaction with nutrients, 409-15 Hyperlipidemia See also Alcohol; familial combined, 380-81 Alcoholics Hypertension exercise and reduction in. Hephaestin, 139 Hereditary hemochromatosis, Hypothalamic-pituitary-130, 134 Histidine adrenal (HPA) axis, 54-58, 114-15 copper transport and, 293-94 inflammatory response Hormone-sensitive lipase, and, 56-58 365-82 leptin and, 54-58, 114-15 in adipose tissue, 365-82 Hypothalamic-pituitary in brown adipose tissue, gonadal axis, 59-60 leptin and, 59-60 372-73 cancer and, 382 Hypothalamic-pituitarythyroid (HPT) axis. diabetes and, 381 58-59 familial combined leptin and, 58-59 hyperlipidemia and, 380-81 lipolysis and, 365-82 metabolic syndrome and, Immune response 381 fatty acids and, 431-51 in muscle, 371-72 peroxisome in pancreatic  $\beta$ -cells. proliferator-activated 373-74 receptors and, 431, properties, 366-67 445-51 Immunity, 485, 497-98 reversible protein phosphrylation, 375-76 apoptosis and, 497-98 structure, 367-71 zinc and, 498 Human milk, 699-719 Indigenous peoples oligosaccarides and, contamination of 699-719 traditional food systems. brain development and, 595-619 717 - 18dilemmas posed by, concentrations of, 703-6 615-19 galactose studies. mercury and other heavy 711-17 metals, 605-6 immunomodulatory PCBs, 606-7 effects of, 709-11 radionuclides, 607

Infant metabolism, 699-719 oligosaccarides in human milk and, 699-719 brain development and. 717-18 concentrations of, 703-6 galactose studies. 711-17 immunomodulatory effects of, 709-11 nonspecific defense mechanisms of, 707-11 prebiotic effects of. 706-7 renal excretion of, 711 structural diversity of. 700 - 3Inflammatory response leptin and, 56-58 Insulin intestinal gene expression and, 311-12, 327-29 leptin and expression of, 48-49 leptin and insulin sensitivity, 45-50 leptin and secretion of, 47-49 lipolysis in adipose tissue and, 374 triacylglycerol synthesis and, 85 Intestinal gene expression, 311 - 30cytokines and, 311, 316-19 growth factors and, 319-20 lactoferrin and, 314-16 luminal environment and butyrate, 311-12 carbohydrates, 321-22 fat, 324-25 insulin, 311-12, 327-29 proteins, 323 vitamins and minerals. 325-26 major histocampatibility

complex, 319

mucosal immune system iron nutritional status Leptin, 45-62 and, 311, 316-17 and, 284-85 apoptosis inhibition and, 50 Intestinal transport, 195-214 studies, 277-83 body fat mass regulation fasting and malnutrition term versus preterm and, 105-19 brown fat and, 342-43, 346 and, 195-214 infants, 285 ion transport, 199-205 type of feeding and, 284 expression and secretion. utilization, 286 107-10 nutrient transport, 205 - 13transport, 129-40 as growth factor, 50-54 mechanisms underlying membrane systems, insulin changes in, 203-7 136-39 expression and, 48-49 Intestine, 311, 311-30, 507, molecular mechanisms. secretion and, 47-49 509, 521 139-40 sensitivity and, 45-50 epithelium, 311 nontransferrin-bound leptin-induced apoptosis in extracellular Ca2+-sensing iron uptake, 134-36 adipocytes, 118-19 transferrin-mediated iron lipid metabolism and, receptor distribution and function delivery, 132-36 116-17 Iron regulatory proteins, 131, metabolism regulation and, of, 521 140, 627-65 mucosal immune system, 105-19 311, 316-17 diversity of function, 643 neuroendocrine effects. See also Intestinal gene hypoxia and, 645-46 114-15 expression; Intestinal nitric oxide and, 643-44 neuropeptides and, 111-13 oxidative stress and. corticotrophin-releasing transport 644-45 factor, 112 absorption and regulation, phosphorylation and, melanocortin system, 129, 131-32, 273 646-48 112 - 13regulation of ferritin and neuropeptide Y, 111-12 deficiency, 129-30, 132, 136, 138, 273-74 transferrin receptor nutrient flux and, 115-18 <sup>59</sup>Fe whole-body counting, synthesis, 636-38 reproduction and, 59-61 273, 275-77, 282 Iron-responsive elements, satiety and, 45-46 homeostasis, 129 133, 139 sites of action, 110-11 stress and, 54-59 metabolism, 627-65 Isoflavones, 485, 491 cellular iron use, 631-32 decreased cancer risk and, sympathetic nervous iron export, 632-33 491 system and, 113 iron regulatory proteins triacylglycerol synthesis K and, 77, 87-88 and, 627-65 iron transport and Kidney Lipid metabolism extracellular Ca2+-sensing uptake, 129-40, 630-31 leptin and, 116-17 transcriptional control, receptor in Lipid peroxidation distribution and function 633-35 iron overload and, 130 nutritional status of of. 518-20 Lipolysis, 365-82 Mg<sup>2+</sup><sub>o</sub>, water, and salt cAMP-mediated activation alcoholics, 405 overload, 129-30 metabolism and, 523-27 of, 376-77 retention by infants, hormone-sensitive lipase L 273-87 and, 365-82 age and, 284 Lactobacillus casei, 3 molecular mechanisms in, 374-77 iron dose/concentration Lactoferrin, 135, 314-15 Lipoprotein lipase, 366 of feeding, 285 breast milk and, 314-16

Lipoproteins apolipoprotein B (ApoB) and, 169-84 assembly of kinetics of, 178 low-density, 170-84 apobec-1 and, 172-77 microsomal triglyerceride transfer protein (MTP) and, 169-70 plasma abetalipoproteinemia and, 663, 672-86 microsomal transfer protein and, 679-86 Liver disease alcoholic See Alcohol: Alcoholics: Hepatotoxicity Lumazine, 153, 158-59 synthase, 158-59 Lysophosphatidic acid acyltransferase (LPAAT), 81-82 M Magnesium nutritional status of alcoholics and, 405 Major histocompatibility complex, 319 Malnutrition alcohol toxicity and, 395-417 metabolism of proteins and, 415-16 nutritional status of alcoholics and, 401-6 toxic interaction of alcohol with nutrients. 409-15 intestinal transport and ion transport and, 199-205, 213-14 nutrient transport, 205-14 Melanocortin system

leptin-mediated effects, 111-12 Menkes gene abnormal copper metabolism and, 291, 297-302 Mercury, 605-6 Metabolism regulation leptin and, 105-19 carbohydrate metabolism, 117-18 energy metabolism, 116 lipid metabolism. 116-17 Metal homeostasis iron regulatory proteins See Iron regulatory proteins Methionine deficiency in alcoholics, 407-8 Microsomal triglyceride protein (MTP), 663-86

protein (MTP), 663–86 abetalipoproteinemia and, 663–64, 667–86 heterodimeric structure, 664–65 hyperlipidemia treatment and, 686 lipid transfer activity, 666 plasma lipoprotein assembly and, 679–86 tertiary structure model, 666 Microsomal triglyceride

transfer protein, 169–70, 178–83
Mitochondrial uncoupling protein (UCP1), 339–56 brown fat thermogenesis and, 339–56 genetic manipulation of, 342–46, 355–56 fatty acids and, 351–52

function, 349–51 homologues, 339–56 expression, 355–56

function, 354-55 structure, 352-54 overexpression, 345-48 structure, 348-49 Mitogen-activated protein kinase, 516 Monoacylglycerol acyltransferase (MGAT). 83-84 Monoglyceride lipase, 366 Monoterpenes tumorigenesis inhibition and, 491-92 Mucosa, 275, 195-214 iron absorption and, 275 mucosal mass calorie restriction and. 199 fasting and malnutrition and, 198-99 oxidative stress and, 205 Mucosal immune system intestinal gene expression nutritional regulation of, 311, 316-17 Myristic acid, 12

#### N.T

Neurogenerative diseases apoptosis and antioxidants and, 493-94 Neuropeptide Y leptin-mediated effects and, 111-12 Nutrient absorption fasting and malnutrition and, 195, 202-13 Nutrient flux leptin and, 105, 115-18 carbohydrate metabolism, 117-18 energy metabolism, 116 - 17lipid metabolism, 116 - 17

0	atherosclerosis and,	Placenta
Obesity	495–97	extracellular Ca <sup>2+</sup> -sensing receptor in, 521–22
anti-obesity drugs, 340, 345, 356	neurodegenerative diseases and, 493–94	distribution and function
brown fat thermogenesis	fasting and, 205	of, 521–22
and, 339–56 genetic manipulation of,	iron regulatory protein and, 644–45	Polyenylphosphatidylcholine (PPC), 395, 409
342-46, 355-56	_	liver disease and, 395, 409
mitochondrial	P	Polyunsaturated fatty acid
uncoupling protein and,	Parathyroid	(PUFA), 86
339–56	extracellular Ca <sup>2+</sup> -sensing	PPAR
exercise and reduction in, 22	receptor and, 507, 517 distribution and function	See Peroxisome proliferator-oriented
hormone-sensitive lipase	of, 517	receptor
and, 365, 382, 379-80,	hormone secretion, 507,	Pregnancy-induced
382	513–14	hypertension, 249,
leptin and, 105–19	PCBs in food, 606–7	255–56
triacylglycerol synthesis and, 77, 90–91	Permeability intestinal, 195, 202–5	Prostaglandin receptors, 431, 439–40
Oligosaccarides	fasting and malnutrition	Prostaglandins
human milk and, 699-719	and, 195, 202-5	immunomodulatory roles
brain development and, 717–18	Perilipin, 365 Peroxisome	of dietary fatty acids, 431, 436–37, 439–51
concentrations of, 703–6	proliferator-activated	receptor-mediated
galactose studies,	receptor (PPAR), 77, 86–87, 347, 431,	signaling pathways and, 439–40
immunomodulatory	445-49, 535, 537-42	Proteasomes, 169-70,
effects of, 709-11	adipocyte differentiation	180-83
infants' renal excretion	and, 535, 537-42	Protein, 1, 4-7, 415-16,
of, 711	fatty acid activation of,	464–77
nonspecific defense	445-47	adaptation to low-protein
mechanisms of, 707-11	immune and inflammatory	diets, 6–7
prebiotic effects of,	responses and, 431,	breakdown, 468-77
706–7	447–49	dietary requirements, 4-7
structural diversity of,	triacylglycerol synthesis	growth and, 6-7
700–3	and, 77, 86–87	metabolism
Osteoporosis, 1, 9–10 calcium intake and, 9–10	Phase-2 enzyme inducers apoptosis and, 485, 489–90	effects of ethanol on, 415–16
exercise and reduction in.	Phosphatidate	nitrogen balance and, 4
22	phosphohydrolase	synthesis, 464-77
Western-style diet and, 10	(PPH-1), 83	turnover, 465-77
Oxidative stress	Phospholipases, 516	Protein disulfide isomerase,
alcohol metabolism and,	Physical activity	663
395, 401, 414	See Exercise	Protein kinase A, 365
apoptosis and, 485, 493-97	Pituitary-derived growth	Pyridoxine
age-related diseases and, 485	hormone leptin and, 51–52	deficiency in alcohols, 406–7

#### R Radionuclides, 607 Receptor-mediated signaling pathways modulation by dietary fatty acids, 431, 439-51 prostaglandin E receptors and, 439-40 Reductase, 153, 156 Reproduction leptin and, 45, 59-61 Riboflavin nutritional status of alcoholics, 404 Ribulose 5-phosphate, 153 Riboflavin (vitamin B2) biosynthesis, 153-61 genetics and regulation, 161 deaminase and, 153, 156 reductase and, 153, 156 3,4-dihyroxy-2-butanone-4-phosphate synthesis and, 157-58 guanosine triphosphate and, 153-54, 156 lumazine and, 153, 158-59

pathway, 154-56

synthase, 160-61

S

395, 407-8
deficiency in alcoholics,
407-8
Satiety
leptin and, 45-46
Secretion
intestinal, 195, 201-2
fasting and malnutrition
and, 201-2
Sedentary behavior, 21-37
behavioral determinants of
excercise and, 21-37
See also Exercise
Selenium

S-adenosylmethione (SAMe),

nutritional status of
alcoholics, 404
Sexual maturation
leptin and, 60-61
Skeletal muscle
amino acid metabolism
and, 458-64
diurnal and exercise
modulation of, 461-62
intermediary, 460
transport, 460
composition and function,
459-60
fuel metabolism in, 462-64
protein metabolism and,
458–59, 464–59
Smoking
exercise and, 27, 33
Sphingolipids
protective effect against
cancer, 492-93
SREBP, 77, 85–86
transcriptional control of
adipogenesis and, 535,
544-46
transcriptional regulation
of triacylglycerol
synthesis by, 85–86
Stable isotopes
iron retention in infants
and, 273, 275-87

# T Thermogenesis, 339–56 brown fat-derived nonshivering (NST), 340–56 genetic manipulation of, 342–46, 355–56 mitochondrial uncoupling protein homologues and, 339–56 Thiamine deficiency in alcoholics, 406–7

leptin and, 45, 54-59

Stress

Trace minerals
nutritional status of
alcoholics and, 406
Transferrin
iron transport and, 129-40
receptors, 129, 627,
630-65
molecular control of iron
metabolism and, 627,
630-65
Translocation, 169, 182-84
Transtheoretical model, 25,
34–35
Triacylglycerol (TAG)
synthesis, 77-94
enzymes of
acyl-CoA synthetase
(ACS), 79-81
diacylglycerol
acyltransferase, 84
dihydroxyacetone-
phosphate
acyltransferase
(DHAPAT), 83
glycerol-3-phosphate
acyl transferase (GPAT),
81-82
lysophosphatidic acid
acyltransferase (LPAT),
81-82
monoacylglycerol
acyltransferase (MGAT),
83-84
nutritional control of,
85-89
phosphatidate
phospohydrolase
(PPH-1), 83
physiological control of,
89-91
obesity and, 90-91
transcriptional regulation,
85-90
exercise and, 89-90
hormones and, 85,
88-89
leptin and, 87-88

ana minarala

peroxisome proliferator-activated receptor (PPAR), 77, 86-87 SREBP and, 85-86 Triglycerides (TG), 365-66 hydrolysis of, 366 Tumor carcinogenesis fat and, 223

U Ubiquitin, 169, 170, 180–83

## V Vitamin A adverse reaction of ethanol with, 409–13 deficiency, 674–75 Vitamin B<sub>2</sub> (riboflavin) biosynthesis, 153–61 genetics and regulation, 161

deaminase and, 153, 156 reductase and, 153, 156 3,4-dihyroxy-2-butanone-4-phosphate synthesis and, 157–58

guanosine triphosphate and, 153-54, 156 lumazine and, 153, 158-59 pathway, 154-56 synthase, 160-61 Vitamin B<sub>12</sub> nutritional status of alcoholics, 404 Vitamin C nutritional status of alcoholics, 402-3 Vitamin D nutritional status of alcoholics, 403 Vitamin E deficiency, 672, 674-75 nutritional status of alcoholics, 404 Vitamin K nutritional status of alcoholics, 403

W Wernicke-Korakoff syndrome, 406 Wilson gene, 291, 297–302

abnormal copper metabolism and, 297-302 Wine cancer and, 566-68 cardiovascular disease and, 573-81 flavanoids in, 568-72 health benefits of, 561-82 lipoprotein biology, 573-75 oxidation of low-density, 576-77 nonalcoholic components, 568-70 oxidative susceptibility, 577-78 vascular-wall biology, 578-81

Zinc, 405, 485, 497, 498 apoptosis and atherosclerosis and, 497 immunity and, 498 nutritional status of alcoholics, 405



